Volume 3

DRAINAGE AND FLOOD CONTROL

Drainage and Flood Control addresses the City Council Broad Goals of protecting a diverse, family-oriented community where neighborhoods are safe and well maintained; and coordinating planning to balance infrastructure and resource needs within the budget. This program achieves these goals through flood plain mapping, meeting regulatory requirements, and identifying and correcting hazards to reduce future flood damage potential. This is accomplished through the use of detention basins, culvert and channel projects, and a program of neighborhood drainage improvements. Approximately 3% (\$29.5 million) of the CIP has been identified to address the drainage and flood control needs of the City. Highlights of the FY 2005/06 program include: East Union Hills Interceptor Channel (\$1.9 million); Flood Plain Acquisition Program (\$2.4 million); Pima Road Drainage System (\$2.2 million); North Scottsdale Road Corridor – Drainage Project (\$6.7); and Upper Camelback Wash Watershed (\$6.4 million).

Project #	Project Name	FY 2005/06 Adopted	FY 2006/07 Forecast	FY 2007/08 Forecast	FY 2008/09 Forecast	FY 2009/10 Forecast	Total	Estimated Annual Operating Impact	Volume 3 Page # Reference
Drainage 8	k Flood Control								
F0601	TPC Drainage Improvements	1,280.00	-	-	-	-	1,280.00	-	54
F0602	Loop 101 Outlet Storm Drain	1,070.00	2,375.00	-	-	-	3,445.00	-	58
TBA	Loop 101 Detention Basin	-	4,097.00	-	-	-	4,097.00	-	57
F0603	South Scottsdale Road Drainage Corridor	225.00	2,742.20	-	-	-	2,967.20	-	63
F0604	Reach 11 Drainage Improvements	456.00	-	-	-	-	456.00	-	62
F0605	Powerline Interceptor Channel	190.00	1,000.00	1,038.00	-	-	2,228.00	-	62
F8410	Automated Flood Warning System-North Area	194.40	-	-	-	-	194.40	-	55
F0502	Drainage Improvements	1,214.60	3,849.00	-	-	-	5,063.60	-	56
F0401	East Union Hills Interceptor Channel	1,940.80	-	-	-	-	1,940.80	-	56
F0302	Floodplain Acquisition Program	2,366.60	-	-	-	-	2,366.60	-	56
F0201	Granite Reef Watershed	39.00	-	-	-	385.00	424.00	-	57
F0402	Indian School Road Drainage	1,665.00	-	-	-	-	1,665.00	-	57
F0303	86th Street Corridor Drainage Improvements	385.00	1,158.00	-	-	-	1,543.00	-	55
F2101	104th Street Storm Drain - Cactus Road to Cholla Drive (Bentree Watershed)	225.00	-	-	-	-	225.00	-	55
F0403	McDonald Drive Corridor-Drainage Improvement	1,482.00	-	-	-	-	1,482.00	-	58
F6302	Neighborhood Stormwater Management Improvements	1,150.00	150.00	150.00	-	-	1,450.00	-	58
F6305	North Area Basin Master Plan	1,083.30	-	-	-	-	1,083.30	-	59
F2711	Northern Stormwater Risk/Vulnerability Management	12,059.89	-	-	-	-	12,059.89	-	60
F0712	NPDES Monitoring Stations/Sampling	832.89	250.00	-	-	-	1,082.89	-	60
F0305	Outfall Drain-Pima Freeway to Union Hills	2,900.00	-	-	-	-	2,900.00	-	61
F0503	Pima Road Drainage System	2,183.40	-	-	-	-	2,183.40	-	61
F0304	North Scottsdale Road Corridor - Drainage Project	6,743.90	-	-	-	-	6,743.90	-	59
F6301	Severe Weather Warning & Response Program	538.71	-	-	-	-	538.71	-	62
F0204	Stormwater Drain Pollution Prevention Markers	301.00	-	-	-	-	301.00	-	63
F0203	Upper Camelback Wash Watershed	6,442.20	-	-	-	-	6,442.20	-	63

Community Services Department

F0601 - TPC Drainage Improvements

Estimated Completion: 10/31/2005 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: Hayden and Bell Roads

Description: This project is to make improvements to the existing drainage features in the TPC stadium and Desert Golf

Courses to restore to original or improved conditions.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	1,280.0	0.0	0.0	0.0	0.0	1,280.0
_	1 280 0	0.0	0.0	0.0	0.0	1 280 0

F2101 - 104th Street Storm Drain - Cactus Road to Cholla Drive (Bentree Watershed)

Estimated Completion: 09/30/2004 Estimated ITD Expenditures: \$225,000 Operating Impact: \$0

Location: Bounded by 100th Street on the west; 105th

Street on the east: Cactus Road on the north:

Cholla Dr/Shea Blvd on the south

Description: Construct a combination of storm drains and drainage channel improvements, as identified in Scottsdale's Master Storm Water Plan, to provide capacities to handle the 100-year storm level.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	225.0	0.0	0.0	0.0	0.0	225.0
	225.0	0.0	0.0	0.0	0.0	225.0

F0303 - 86th Street Corridor Drainage Improvements

Estimated Completion: 12/31/2006 Estimated ITD Expenditures: \$357 Operating Impact: \$0

Location: The area bounded by Jackrabbit Road on the

north; Indian Bend Wash on the east; Chaparral Road on the south; and Scottsdale Road on the

west

Description: Design and construct storm drain improvements to minimize street and local area flooding by installing collector systems along the 86th Street corridor between McDonald and Chaparral that will connect to existing large storm drains in Jackrabbit and Chaparral Roads.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	385.0	1,158.0	0.0	0.0	0.0	1,543.0
	385.0	1,158.0	0.0	0.0	0.0	1,543.0

F8410 - Automated Flood Warning System - North Area

Estimated Completion: 01/31/2006 Estimated ITD Expenditures: \$53,800 Operating Impact: \$0

Location: Citywide

Description: Identify critical city facility mitigation measures and identify wash crossings on major roadways and gage the flow by direct or indirect methods. Also, provide an early warning system and automatically alert safety and field forces so that appropriate action can be taken while at the same time identifying areas of the city that are likely to be impacted by severe weather.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
FCD Contribution	96.9	0.0	0.0	0.0	0.0	96.9
General Fund	97.5	0.0	0.0	0.0	0.0	97.5
	194.4	0.0	0.0	0.0	0.0	194.4

F0502 - Drainage Improvements

Estimated Completion: 06/30/2008 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: The area bounded by Osborn Road on the north:

Indian Bend Wash on the east; Thomas Road on

the south; and 64th Street on the west

Description: The goal of the project is to eliminate flooding up to the 10-year event for this highly developed residential and commercial area. Currently, the storm drain servicing this corridor is an undersized facility along Avalon Drive/Scottsdale Road/Thomas Road. The options for the project focus on the installation of additional storm drains. The current drainage system conveys less than the 2-year event in nearly all instances. The total watershed area is approximately 1.2 square miles.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	1,214.6	3,849.0	0.0	0.0	0.0	5,063.6
-	1.214.6	3.849.0	0.0	0.0	0.0	5.063.6

F0401 - East Union Hills Interceptor Channel

Estimated Completion: 05/31/2006 Estimated ITD Expenditures: \$219,498 Operating Impact: \$0

Location: Beginning at Pima Road and Union Hills and

following the Union Hills alignment to the West and terminating at the inlet structure of the Loop

101 detention basin.

Description: Design and construct open channel and storm drain improvements to collect and route stormwater flows from the intersection of the "new" Pima Road and Union Hills Drive westerly to the planned Loop 101 detention basin.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	1,940.8	0.0	0.0	0.0	0.0	1,940.8
-	1,940.8	0.0	0.0	0.0	0.0	1,940.8

F0302 - Floodplain Acquisition Program

Estimated Completion: 06/30/2006 Estimated ITD Expenditures: \$2,823 Operating Impact: \$0

Location: Multiple northern locations

Description: Develop a floodplain acquisition program for major wash corridors north of the CAP canal to ensure an effective and efficient drainage network is maintained/or is provided as future development occurs.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	2,366.6	0.0	0.0	0.0	0.0	2,366.6
	2,366.6	0.0	0.0	0.0	0.0	2,366.6

F0201 - Granite Reef Watershed

Estimated Completion: 12/31/2010 Estimated ITD Expenditures: \$39,868 Operating Impact: \$0

Location: Osborn to McKellips, Pima to Granite Reef

Description: To provide 100 year flood protection and to eliminate the existing FEMA A zone designation which carries a mandated need for flood insurance for the moderately priced homes in the Granite Reef Wash corridor south of Thomas Road and to improve drainage conditions for locations between Osborn and Thomas Road to approximately a 10-year level of protection.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	39.0	0.0	0.0	0.0	385.0	424.0
	39.0	0.0	0.0	0.0	385.0	424.0

F0402 - Indian School Road Drainage

Estimated Completion: 12/31/2006 Estimated ITD Expenditures: \$61,267 Operating Impact: \$0

Location: The area bounded by Glenrosa Avenue on the

north; 86th Street on the east; Osborn Road on the south; and Hayden Road on the west

Description: The goal of the project is to eliminate flooding up to the 10-year event for this highly developed residential and commercial area. Currently, the only storm drain servicing this neighborhood is an undersized facility along Indian School Road between 86th Street and the Indian Bend Wash. The options for the project focus on the installation of storm drains. The current drainage system conveys approximately the 2- to 5-year event, depending on location within the watershed. The total watershed area is approximately 0.4 square miles.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	1,665.0	0.0	0.0	0.0	0.0	1,665.0
·	1,665.0	0.0	0.0	0.0	0.0	1,665.0

NEW98 - Loop 101 Detention Basin

Estimated Completion: 05/31/2007 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: North of Loop 101 and East of Pima Road

Description: Construct a stormwater detention basin on a 52-acre site north of the Loop 101 Freeway, west of Pima Road and south of the Water Campus to protect lands south of the freeway from the 100 year flood.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	0.0	4,097.0	0.0	0.0	0.0	4,097.0
	0.0	4,097.0	0.0	0.0	0.0	4,097.0

F0602 - Loop 101 Outlet Storm Drain

Estimated Completion: 01/31/2007 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: South of Loop 101 from 82nd to Union Hills to

Hayden Road

Description: Construct a storm drain attaching to the existing outlet structure installed under the Loop 101 Freeway and

proceeding southerly and westerly to an existing channel along Hayden Road.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	1,070.0	2,375.0	0.0	0.0	0.0	3,445.0
	1.070.0	2.375.0	0.0	0.0	0.0	3.445.0

F0403 - McDonald Drive Corridor Drainage Improvement

Estimated Completion: 07/31/2005 Estimated ITD Expenditures: \$39,559 Operating Impact: \$0

Location: East of Hayden, North of McDonald to the IBW

Low Flow

Description: The goal of the project is to eliminate flooding up to the 10-year event for this established neighborhood. The total

watershed area is approximately 0.9 square miles.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	1,482.0	0.0	0.0	0.0	0.0	1,482.0
	1,482.0	0.0	0.0	0.0	0.0	1,482.0

F6302 - Neighborhood Stormwater Management Improvements

Estimated Completion: 06/30/2008 Estimated ITD Expenditures: \$1,916,700 Operating Impact: \$0

Location: Citywide

Description: Provide as-needed drainage improvements, which address localized drainage and flooding problems.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	0.0	0.0	0.0	0.0	0.0	0.0
GO Bond 2000	800.0	0.0	0.0	0.0	0.0	800.0
In-Lieu Fees	350.0	150.0	150.0	0.0	0.0	650.0
	1,150.0	150.0	150.0	0.0	0.0	1,450.0

F6305 - North Area Basin Master Plan

Estimated Completion: 06/30/2006 Estimated ITD Expenditures: \$778,369 Operating Impact: \$0

Location: North of Dynamite Boulevard

Description: Provide detailed master planning for approximately five major drainage basins north of the Central Arizona Project canal to ensure that a logical and consistent drainage network is constructed by future development.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	1,083.3	0.0	0.0	0.0	0.0	1,083.3
-	1,083.3	0.0	0.0	0.0	0.0	1,083.3

F0304 - North Scottsdale Road Corridor - Drainage Project

Estimated Completion: 03/31/2006 Estimated ITD Expenditures: \$177,600 Operating Impact: \$0

Location: Bounded by Thunderbird Road on the north;

Scottsdale Road on the east; Shea Boulevard on

the south and 70th Street on the west

Description: The goal of the project is to eliminate flooding up to the 10-year event for this highly developed residential and commercial area and to protect Scottsdale Road from off-site flows. The benefiting area is bounded approximately by Thunderbird Road on the north, Scottsdale Road on the east, Shea Boulevard on the south, and 70th Street on the west. The total watershed area is approximately 5.0 square miles.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
FCD Contribution	3,427.0	0.0	0.0	0.0	0.0	3,427.0
General Fund	2,620.0	0.0	0.0	0.0	0.0	2,620.0
GO Bond 2000	696.9	0.0	0.0	0.0	0.0	696.9
_	6,743.9	0.0	0.0	0.0	0.0	6,743.9

F2711 - Northern Stormwater Water Risk/Vulnerability Management

Estimated Completion: 06/30/2005 Estimated ITD Expenditures: \$11,866,500 Operating Impact: \$(

Location: Area bounded on the north by Dixileta Dr., the

south by the CAP Canal, the east by 120th St.,

and the west by Scottsdale Rd.

Description: The project will identify the potential flood risks to citizens living within or near alluvial fans in North Scottsdale. Construct detention basins at Happy Valley Road, Deer Valley Road and Union Hills Drive, channel improvements from north of the CAP Canal to ¼ mile north of Jomax Road to the Union Hills Basin, and a storm drain outlet from the Union Hills Basin to the Tournament Players Club desert golf course.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
Contributions	3,552.1	0.0	0.0	0.0	0.0	3,552.1
GO Bonds	8,507.8	0.0	0.0	0.0	0.0	8,507.8
_	12,059.9	0.0	0.0	0.0	0.0	12,059.9

F0712 - NPDES Monitoring Stations/Sampling

Estimated Completion: 06/30/2007 Estimated ITD Expenditures: \$1,319,500 Operating Impact: \$0

Location: Citywide

Description: Continuation of a federally mandated program to satisfy the requirements of the National Pollutant Discharge Elimination System (NPDES). Assures quality of storm water runoff and complies with environmental law. Also, provides an additional measure of assuring a healthy environment for recreation within the Indian Bend Wash, as well as an additional measure of safety by precluding hazardous and volatile wastes being discharged into the storm drains. The costs of sampling, testing, monitoring, administration, systems installation and maintenance will be matched 50% by the Flood Control District in conformance with an Inter-Governmental Agreement for the NPDES program.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
Bond Interest	6.9	0.0	0.0	0.0	0.0	6.9
General Fund	826.0	250.0	0.0	0.0	0.0	1,076.0
_	832.9	250.0	0.0	0.0	0.0	1,082.9

F0305 - Outfall Drain - Pima Freeway to Union Hills

Estimated Completion: Estimated ITD Expenditures: \$2,899,078 Operating Impact: \$0

Location: East of Scottsdale Road and south of the Pima

Freeway.

Description: Collect significant runoff that is passed through the Pima Freeway in two sets of dual 8' x 6' box culverts. As part of the Arizona Department of Transportation's freeway design, these flows are currently encouraged to spread out over the properties lying south of the freeway (portion of the Stacked 40s development and State lands). By collecting the flows into a managed drainage system, regional off-site drainage issues and community protection can be addressed, the design of Union Hills Drive can be improved, and new economic activity in the freeway area can be supported. Right-of-way acquisition and design will be completed as a part of a development agreement in Fiscal Year 02/03.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	2,900.0	0.0	0.0	0.0	0.0	2,900.0
·	2,900.0	0.0	0.0	0.0	0.0	2,900.0

F0503 - Pima Road Drainage System

Estimated Completion: 05/31/2006 Estimated ITD Expenditures: \$3,800 Operating Impact: \$0

Location: Beginning at a point on the western side of Pima Road opposite a cul-de-sac on Rimrock Drive and continuing southerly to approximate Union

Hills.

Description: Design and construct open channel and storm drain improvements, in conjunction with major roadway improvements, to collect and route stormwater flows in the Pima Road corridor southerly to the intersection with the "new" Union Hills Drive. Flows will then be routed westerly to the planned Loop 101 detention basin.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	1.0	0.0	0.0	0.0	0.0	1.0
GO Bond 2000	2,182.4	0.0	0.0	0.0	0.0	2,182.4
	2 183 4	0.0	0.0	0.0	0.0	2.183.4

F0605 - Powerline Interceptor Channel

Estimated Completion: 03/31/2008 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: Powerline Alignment from Thompson Peak

Parkway to Loop 101

Description: Design and construction of an interception channel to convey water flows south to the Loop 101 Detention Basin

from Thompson Peak Parkway along the Power Line Corridor.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	190.0	1,000.0	1,038.0	0.0	0.0	2,228.0
_	190.0	1.000.0	1.038.0	0.0	0.0	2.228.0

F0604 - Reach 11 Drainage Improvements

Estimated Completion: 03/31/2006 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: Pima and 101 Freeway

Description: Grade and install recharge wells in the area between Thompson Peak Parkway and Brett's Barn at WestWorld to

facilitate standing water removal.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	456.0	0.0	0.0	0.0	0.0	456.0
_	456.0	0.0	0.0	0.0	0.0	456.0

F6301 - Severe Weather Warning & Response Program

Estimated Completion: 06/30/2006 Estimated ITD Expenditures: \$1,216,278 Operating Impact: \$0

Location: Citywide

Description: Citywide program for identification, notification, and emergency response to flood threats and other severe weather emergencies. Additionally, the program continuation incorporates updates including newly mapped floodplains, changes in infrastructure, critical facilities and new technology.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	538.7	0.0	0.0	0.0	0.0	538.7
_	538.7	0.0	0.0	0.0	0.0	538.7

F0603 - South Scottsdale Road Drainage Corridor

Estimated Completion: 12/31/2007 Estimated ITD Expenditures: \$0 Operating Impact: \$0

Location: Along Belleview between Scottsdale Rd. &

Indian Bend Wash

Description: Construction of a storm drain and lateral connections to alleviate street flooding in Scottsdale Road and provide

localized drainage improvements in neighborhoods along the west side of the corridor.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	225.0	2,742.2	0.0	0.0	0.0	2,967.2
	225.0	2.742.2	0.0	0.0	0.0	2.967.2

F0204 - Stormwater Drain Pollution Prevention Markers

Estimated Completion: 06/30/2007 Estimated ITD Expenditures: \$77,519 Operating Impact: \$0

Location: Multiple locations

Description: Purchase and install durable ceramic markers at all storm drains citywide to remind and educate the public

against dumping pollutants into the city's storm water system.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
GO Bond 2000	301.0	0.0	0.0	0.0	0.0	301.0
	301.0	0.0	0.0	0.0	0.0	301.0

F0203 - Upper Camelback Wash Watershed

Location: Bounded by Sweetwater Avenue on the north;

96th Street on the east; Shea Boulevard on the

south and 90th Street on the west

Description: The goal of the project is to eliminate flooding up to the 100-year event for this major wash corridor. The benefiting area is highly developed with a mix of single-family, multi-family and commercial properties. The total watershed area north of Shea Boulevard is approximately 2.6 square miles.

Funding by Source(s) (in thousands of dollars)	Adopted FY 2005/06	FY 2006/07	FY 2007/08	FY 2008/09	FY 2009/10	Total
General Fund	210.0	0.0	0.0	0.0	0.0	210.0
GO Bond 2000	6,232.2	0.0	0.0	0.0	0.0	6,232.2
_	6,442.2	0.0	0.0	0.0	0.0	6,442.2

